NEOEPICRIUS, GEN. N., FROM WESTERN NORTH AMERICA (ACARI : MESOSTIGMATA : EPICRIIDAE)

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ACARI, EPICRIIDAE,
NEOEPICRIUS, TAXONOMY,
NORTH AMERICA

SUMMARY: *Neoepicrius,* a paedomorphic genus of Epicriidae, is described as new with *Neoepicrius krantzi* sp. n. from Oregon designated as type species. Also described as new are *Neoepicrius californicus* (California), *Neoepicrius intermedius* (British Columbia), *Neoepicrius titanus* (British Columbia), and *Neoepicrius orphanus* (British Columbia). *Neoepicrius* sp. (California), known from one male, is described but not named. A key to species, based on adult females, is provided.

ACARI, EPICRIIDAE,
NEOEPICRIUS, TAXONOMY
AMÉRIQUE DU NORD

RÉSUMÉ : *Neoepicrius,* nouveau genre paedomorphe d'Epicriidae, est défini et *Neoepicrius krantzi* sp. n. d'Oregon désigné espèce type. *Neoepicrius californicus* (Californie), *Neoepicrius intermedius* (Colombie britannique) *Neoepicrius titanus* (Colombie britannique), et *Neoepicrius orphanus* (Colombie britannique) sont aussi décrits. *Neoepicrius* sp. (Californie) connu par le mâle, est décrit mais non nommé. Une clé de reconnaissance des espèces basée sur les femelles adultes est fournie.

INTRODUCTION

Previous knowledge of the family Epicriidae is summarized by EVANS (1955), ATHIAS-HENRIOT (1961), BREGETOVA (1977) and KARG (1993). The new genus described here is apparently confined to western North America and was first illustrated by KRANTZ (1970, Pl. 19). In the generic description, uniquely apomorphic characters are indicated with an asterisk (*). Types depository: Centre for Land and Biological Resources Research (CLBRR) and Ohio State University Acarology Laboratory (OSUAL). The system of sigla for designating dermal glands and lyrifissures is based on JOHNSTON & MORAZA 1991.

Neoepicrius new genus
(FIGS 4-7)
TYPE SPECIES : *Neoepicrius krantzi* sp. n.
Genus based on adult female and male representing four species.

Diagnosis: Chelicera (FIG. 9) with antiaxial hyaline apophysis; fixed digit with one paraxial, two antiaxial

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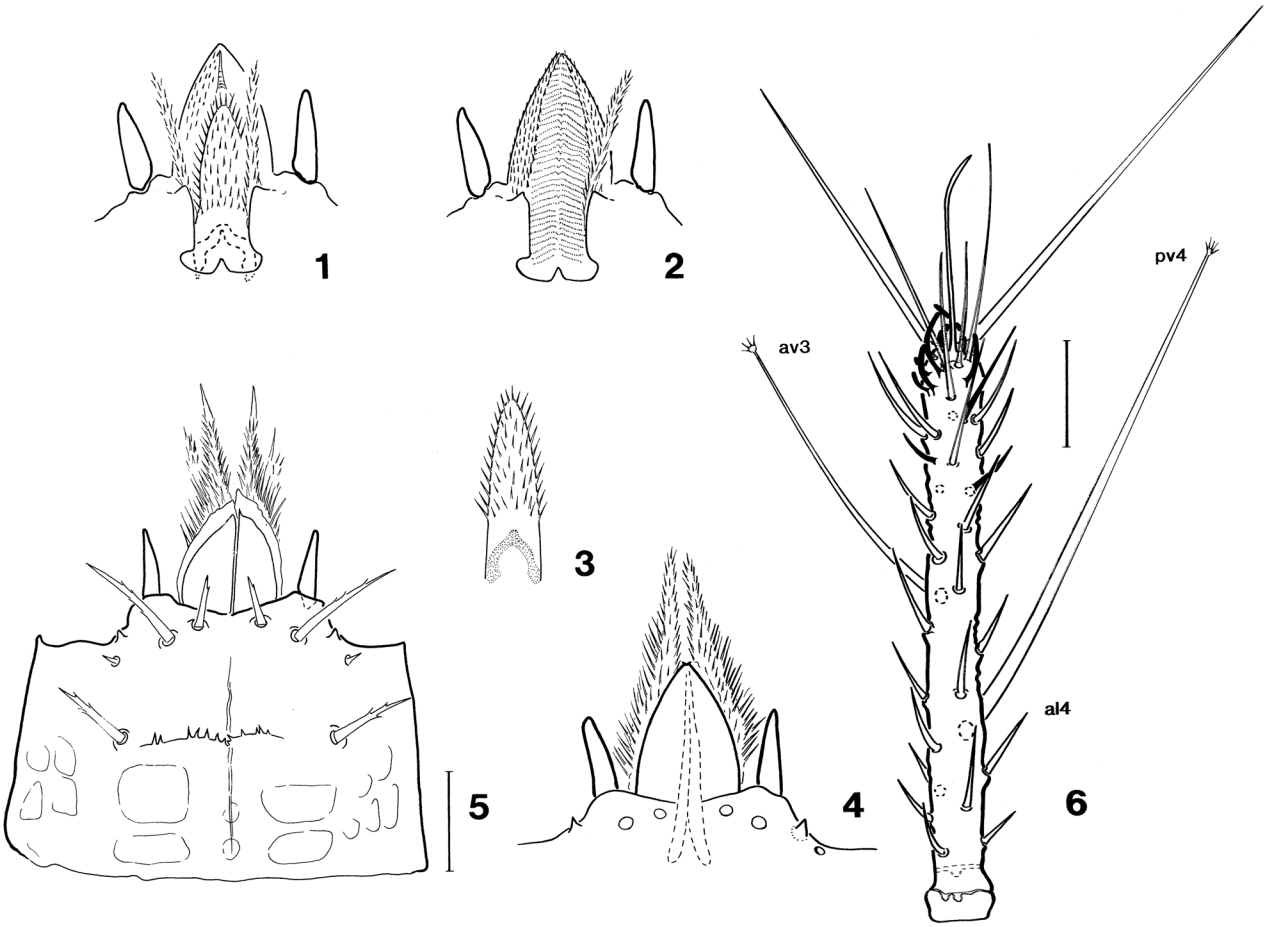
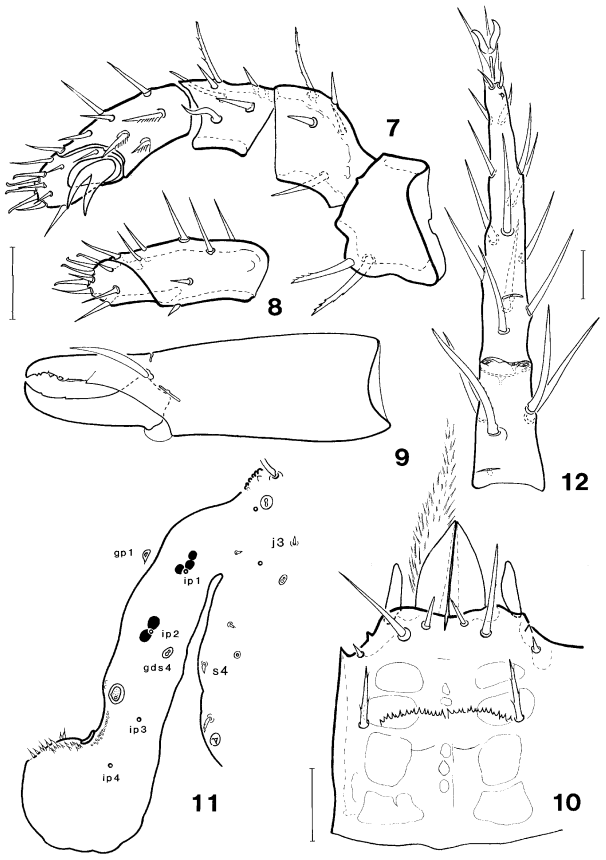


FIGS. 1-6: 1 — 4. *N. krantzi* sp. nov., female. 1. — Subcapitulum, anterior, dorsal. 2. -Subcapitulum, anterodorsal, labrum removed. 3. — Labrum, dorsal. 4. — Subcapitulum, anterior ventral. 5— 6. *N. californicus* sp. nov., female. 5. — Subcapitulum, entire, ventral. 6. — Tarsus I, left side, dorsal. Scale (all figures) = 25 μm.

small teeth; movable digit with two teeth. Subcapitulum (FIG. 5) with hypostomal setae 2 greatly reduced*. Deutosternum with one row of denticles*. Palp (FIGS 7, 8) genu with *al1* sinuate*; tibia with three pectinate setae*; tarsus with reduced chaetotaxy (14 setae); claw 2-tined*. Dorsal shield in females (FIG. 13, 23, 33, 38, 44) reduced, not covering entire dorsum*; lateropeltidial shields well developed*. Males (FIGS 27, 40) with entire and extensive dorsal shield; lateropeltidial shields separate or almost entirely fused with dorsal shield. Dorsal cuticular ornamentation with bi-, tri-, or tetrafurcate tubercles, forming dense polygonal network that extends to opisthonotal soft cuticle. Dorsal chaetotaxy (FIG. 13) reduced: 18 pairs of heterogeneous setae* (*j1, j3, j4, j5, j6, z1, z4, s4, s5, s6, Z1, Z3, Z4, Z5, S2, S3, S4, S5*). Podonotum (FIG. 13) with three pairs of simple glands (*gdj4, gdj6, gdz5*) and five-six pairs of complex glands (*gdj1, gdj3, gds4, gds5, gdz6*, and *gds6*); *gds6* complex (FIGS 13, 20) with one gland and two non-glandular organs or gland absent* (FIG. 25); *gdz6* complex (FIG. 20) with one gland and one non-glandular organ* or complex absent* (FIG. 23). Podonotum with six-eight pairs of lyrifissures. Opisthonotum (FIG. 13) with three pairs of glands* and three-four pairs of lyrifissures*. Lateropeltidial shields (FIG. 11) with one gland*, four lyrifissures. Sternapophysis (FIG. 21) with laciniae trifid, equal in length. Sternum (FIG. 14) with *st2*, *st3* on sternal shield; *st4* on soft cuticle; *iv3*



Figs. 7-12: *N. krantzi* sp. nov., female. 7. — Palp, anterior aspect. — 8. Palpal tibia and tarsus, dorsal aspect. 9. — Chelicera, antiaxial. 10. — Subcapitulum, ventral. 11. — Lateropeltidial sclerite, left, dorsal. 12. — Tarsus IV, dorsal. Scale (7— 9) = 25 μm, (10) = 25 μm, (12) = 10 μm.

absent. Female genital shield (Figs 14, 39) with parallel sides; genital setae *g* (= *st5*), *iv5* on or off shield; *Zv1* off shield*. Females (Fig. 14) with six pairs* and males (Fig. 15, 47) with four or six* pairs opisthogastric setae. Gland *gv2* (Fig. 22) opening on protuberance (pustule)*. Female anal shield (Fig. 22) with three setae; *gv3* anterior to anus*; *gv4, ivp* posterior to anus. Males with anal (Fig. 27) or ventrianal (Fig. 15) shield. Genu IV with eight setae (2-1/1, 3/0-1)*; tibia I with 12 setae (2-3/1, 3/1-2)*; tibia IV with nine setae (2-1/1, 2/1-2)*. Tarsus I (fig. 45) with 45 setae; two long terminally spiculate setae (*av3*, *pv4*)*; *am1*, *av4*, *pv3* absent*; ap1 very reduced*; *al4* present. Pretarsus I entirely absent; without vestige*. Tarsus II-IV with mediodorsal lyrifissure free, not incorporated in circumpodal fissure (Fig. 12).

Neoepicrius krantzi sp. nov.
(Figs 1-22)

Adult female (based on eight specimens). Measurements (measuremens are in micrometers as follows: mean ± standard error, range, n = sample size): Idiosoma length 582 ± 22, width 524-624, n=4.

Gnathosoma (Figs 1-4). Fixed digit with one internal tooth, one paraxial tooth and a reduced antiaxial-ventral apophysis. Pilus dentilus absent. Dorsal seta long, situated basal of antiaxial lyrifissure. Movable digit with two teeth. Arthrododial processes absent. Subcapitulum moderately sclerotized, with normal setation, and one row of denticles. Corniculi short, relatively narrow. Hypostomal processes (Fig. 4) large; hypostomal laciniae long, densely spiculate. Labrum (Fig. 1, 3) relatively short; lightly spiculate dorsally. Paralabra (Fig. 1, 2) long, densely barbed. Hypostomal gutter (Fig. 2) with transverse rows of minute denticles. Tectum strongly dentate.

Idiosomal dorsum (Fig. 13). Dorsal shield reduced in extent (length 458 ± 5, 439-458, n=8) and ornamented with trifurcate tubercles. Podonotal setae, except j1 and s6, very reduced in length; other dorsal setae long, stout, weakly barbed and with widened, spiculate tips; *j6* = ca 1/6x *s6*, *Z3* = ca 3x *Z3-Z4*, *S2* = ca 1/2 x *Z1*, *Z3* longer than *Z1*. Soft cuticle with similar ornamentation with rounded tubercles but not extending to anal shield. Dorsal adenotaxy complete for the genus: *gds6* complex and *gdz6* complex present. Dorsal poroidotaxy lacks *idz6* and *idS1*. Sigillotaxy as in Fig. 13.

Idiosomal venter (Fig. 14). Sternapophysis (Fig. 21) with long base; laciniae short, trifid. Sternum weakly sclerotized; st1 on jugulars, *st2* and *st3* on shield, *st4* on soft cuticle. Genital shield with *st5* (g) and *iv5*; four pairs of sigilla present. Opisthogaster with six pairs of cuticular setae and four pairs of sigilla.

Legs. Chaetotaxy, adenotaxy and poroidotaxy normal for genus. Tarsus I length 169 ± 3, 158-169, n=8, with two long ventral setae with an aciculate head; tarsus II length 231 ± 3, 219-244, n=8; tarsus III length 215 ± 3, 201-230, n=8 and tarsus IV (Fig. 12) length 299 ± 5, 282-232, n=8. Tibia I length 347 ± 4, 334-347, n=8; tibia II length 86 ± 3, 78-93, n=8; tibia III length 84 ± 1, 81-87, n=8: tibia IV

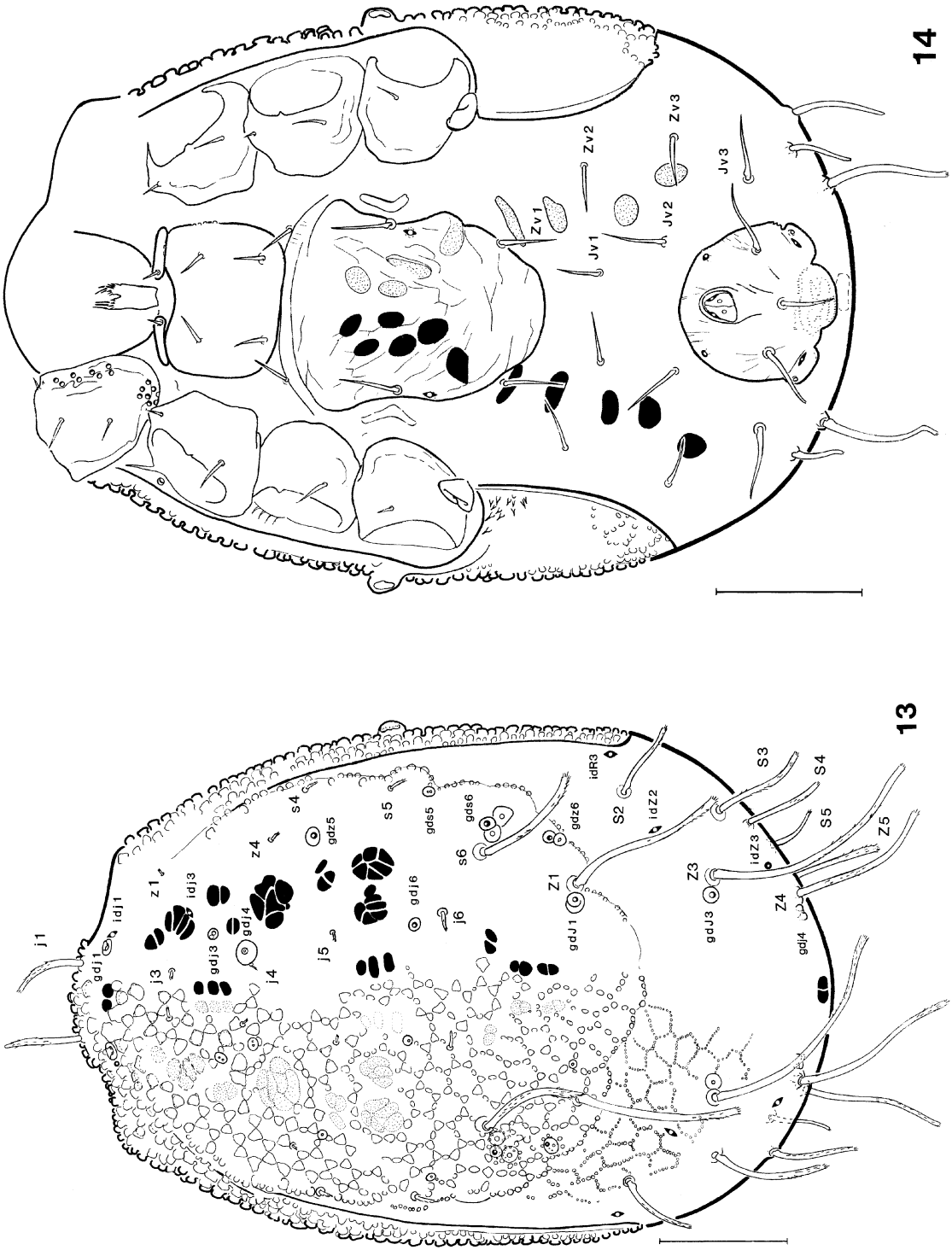
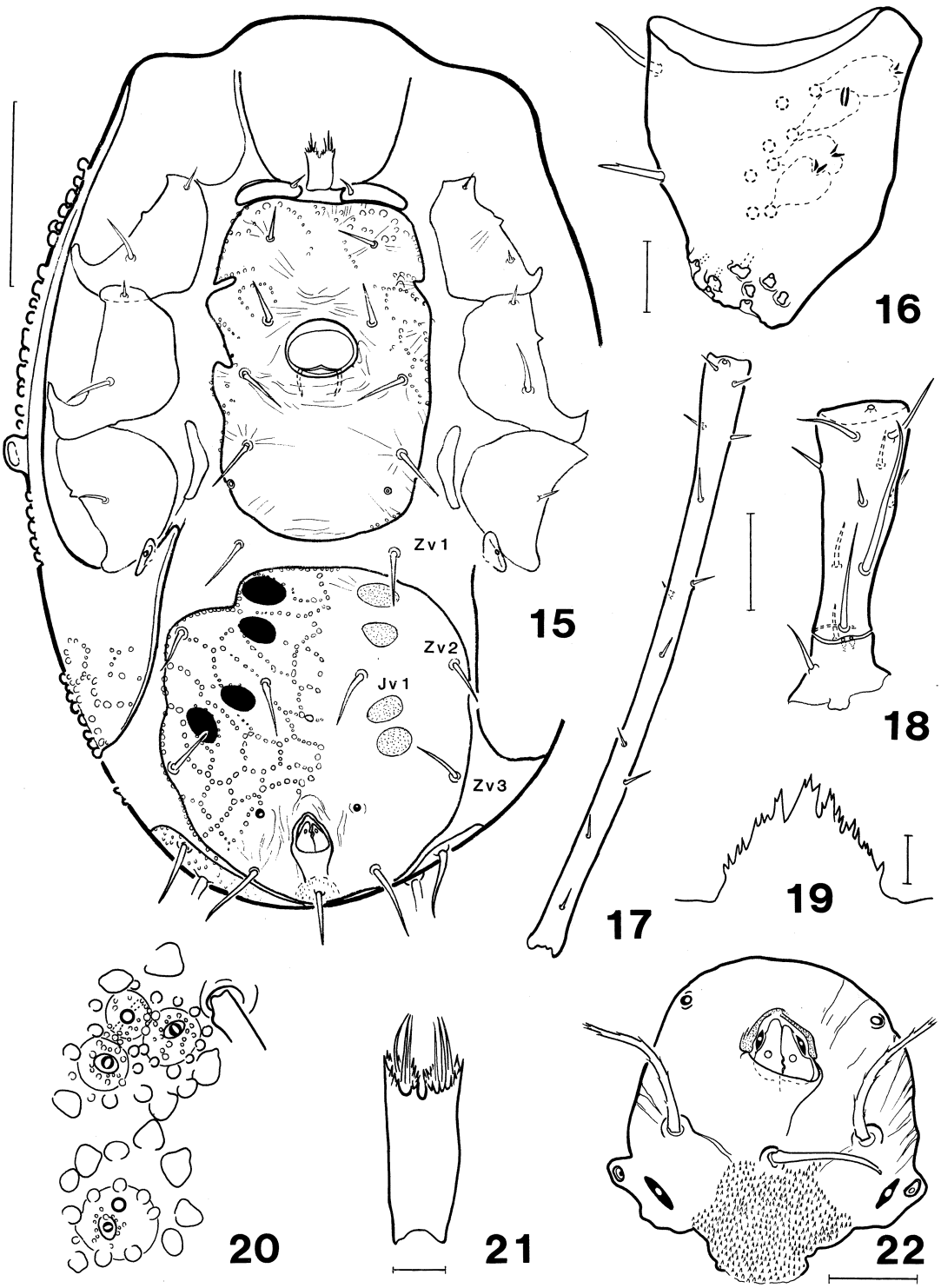


FIG. 13: *N. krantzi* sp. n. ov, female, idiosoma, dorsal. Scale = 100 μm.
FIG. 14: *N. krantzi* sp. nov., female, idiosoma, ventral. Scale = 100 μm.



FIGS 15-22*: N. krantzi* sp. nov. 15. — Male, idiosoma, ventral. 16. — Female, coxa I, right, dorsal. 17. — Female, tibia I, right, dorsal. 18. — Female, femur II, right, dorsal. 19. — Female, tectum, dorsal. 20. — Female, seta *s6*, gland complex *gds6, gdz6*, dorsal. 21. — Female, sternapophysis, ventral. 22. — Female, anal sclerite, ventral. Scale (15) = 100 μm, (16) = 20 μm, (17, 18, 22) = 50 μm, (19) = 10 μm, (21) = 10 μm.

length 121 ± 4, 97 -132, n=8; genu I length 150 ± 2, 142-150, n=8 and femur I length 324 ± 4, 310-340, n=8. Ratio of body length/tibia I = 1. 6. Coxa I with eight anterolateral glands and eight posteroventral glands.

ADULT MALE (based on three specimens). Idiosoma length 475 ± 14, 455-503, n=3, width 354 ± 8, 345-360. Chelicerae, subcapitulum and palps similar to female.

Idiosomal dorsum. Dorsal shield well sclerotized and ornamented as female except posterolateral areas. Dorsal chaetotaxy, adenotaxy and poroidotaxy similar to female.

Idiosomal venter (FIG. 15). Sternigenital shield weakly ornamented; with four pairs of setae; *st1* on jugulars. Genital opening between coxae III; with two valves, the anterior larger and with two internal (eugenital) setae; *iv5* posterior to *st5* (g) seta. Endopodal III present. Opisthogaster with four pairs of setae: *Zv1* on soft cuticle. Ventrianal shield well sclerotized with three pairs of preanal setae; with ornamentation similar to dorsal shield; *Jv5* on dorsal shield.

Legs chaetotaxy, adenotaxy, poroidotaxy similar to female. Tarsus I length 155 ± 1, 153-157, n=3; tarsus II length 202; tarsus III length 186 ± 2, 182-189, n=3; tarsus IV length 241 ± 23, 195-265, n=3; tibia I length 292 ± 4, 284-297, n=3; tibia II length 77 ± 1, 75 -79, n=3; tibia III length 77 ± 3, 72 -81, n=3; tibia IV length 109 ± 1, 108-111, n=3; genu I length 131 ± 2, 129-134, n=3; and femur I length 275 ± 2, 272-279, n=3.

TYPES. Holotype, adult female, The Ohio State University, OSUAL. Type locality. OREGON, about 5 miles NW Corvallis, McDonald State Forest, Benton Co., from litter at base of dead tree, 31. III. 1982, D. E. Johnston & W. C. Welbourn colls. Paratypes: OSUAL, two males at same locality and date; five females from mixed litter at same locality, 3. IV. 1982, same colls. ; two females and one male from oak litter, 3. IV. 1982, at same locality and same colls.

ETYMOLOGY. This species is named for Prof. G. W. KRANTZ, Oregon State University, Corvallis, who first illustrated a representative of *Neoepicrius* (Krantz, 1970, as *Epicrius*) and who generously provided laboratory facilities for W. C. WELBOURN and the junior author during a field trip to Oregon in 1982.

Neoepicrius californicus sp. nov.
(Figs 23-32)

ADULT FEMALE (based on 13 specimens). Idiosoma length 467 ± 12, 419-499, n=6.

Gnathosoma. Chelicerae normal for the genus but with the antiaxial ventral apophysis strongly developed. Hypostomal seta 2 reduced, *hyp* 3 is 2x *hyp 1*, and cs 3/4x *hyp 3* (FIG. 5). Tectum (FIG. 29) triangular and strongly dentate.

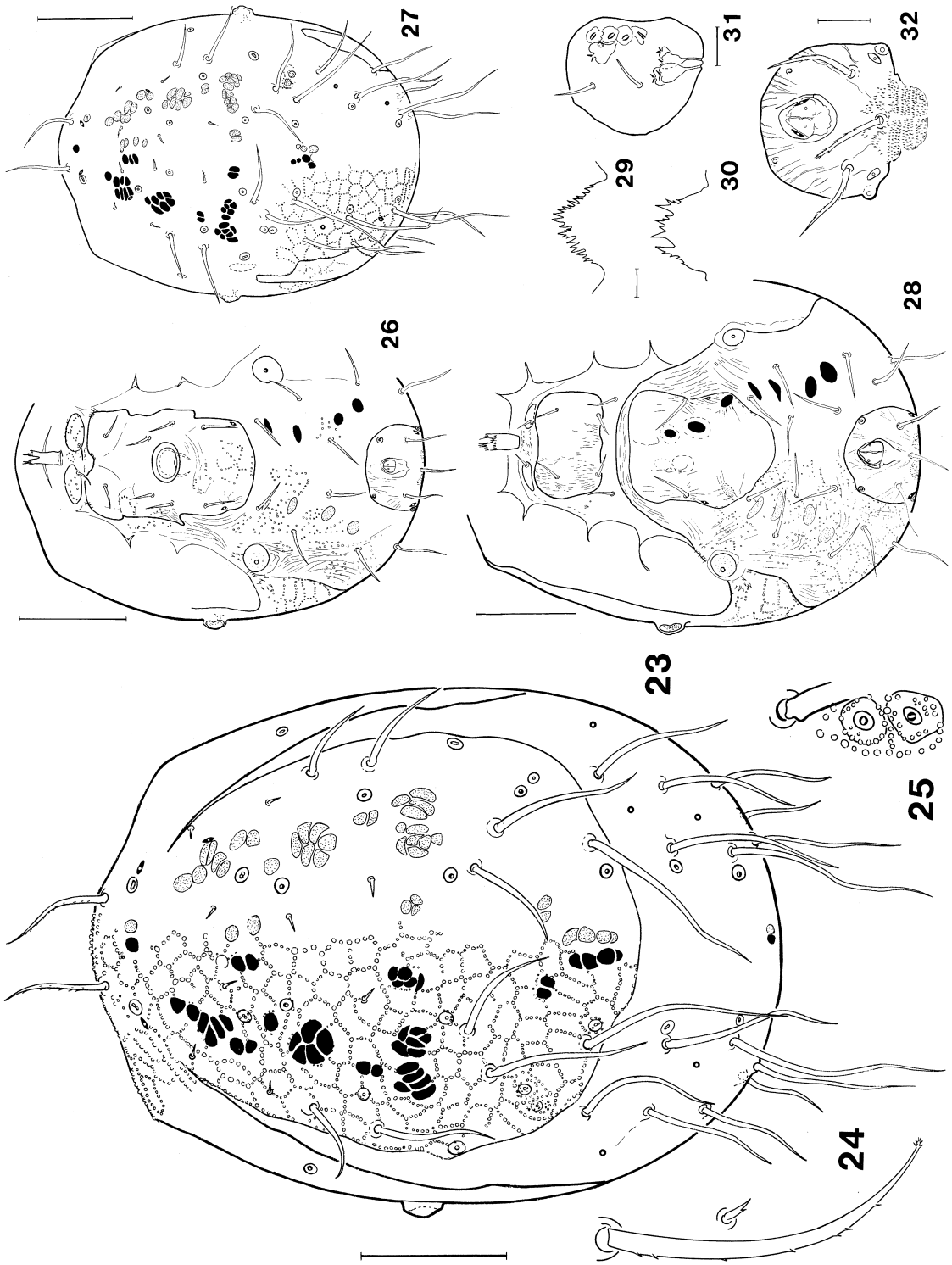
Idiosomal dorsum (FIGS 23-25). Dorsal shield length 346 ± 7, 310-375, n=8; ornamented with rounded tubercules. Soft cuticle of dorsum with weak ornamentation that extends to opisthogastric region. Podonotal *setae j3, j4, j5* and *z1* reduced in length, other setae long, heterogeneous in length (*s4* somewhat shorter than *s5, j6* = *s5, j6* = 0. 7x *s6, Z3* longer than Z1, Z3= 3x *Z3*-Z4, S2 = 0. 7x *Z1, S2* = *s6*); weakly barbed and with spiculate forked tips. Dorsal adenotaxy, poroidotaxy and sigillotaxy as figured; gds6 complex with the gland missing; gdz6 complex absent.

Idiosomal venter (FIG. 28). Venter normal; with metapodal shields absent or poorly sclerotized. Opisthogaster ornamented with rounded tubercles and with six pairs of smooth setae. Anal shield normal (FIG. 22).

Legs. Chaetotaxy, adenotaxy and poroidotaxy normal for genus. Tarsus I (FIG. 6) normal, length 133. 3 ± 1. 7, 127-189, 8; tarsus II length 182 ± 2, 175-190, n=8; tarsus III length 170 ± 2, 160-176, n=8; tarsus IV length 241 ± 3, 232-250, n=8; tibia I length 234 ± 3, 222-243; tibia II length 72 ± 1, 68-77, n=8; tibia III length 70 ± 2, 62-75, n=8; tibia IV length 100 ± 1, 95-106, n=8; genu I length 102 ± 1, 99-106, n=8 and femur I length 230 ± 2. 4, 221-239, n=8. Ratio of body length/tibia I = 1. 9. Coxa I with six anteroventral glands and four posteroventral glands.

ADULT MALE (based on two specimens). Idiosoma length 374, 389; width 280, 300.

Gnathosoma. Chelicerae, subcapitulum and palps similar to female.



FIGS 23-25: *N. californicus* sp. nov., female. 23. — Idiosoma, dorsal. 24. — Setae *j5, z1*. — 25. — Seta *s6*, gland complex *s6*. Scale (23) = 100 μm.

FIGS 26-32: *N. californicus* sp. nov. 26. — Male, idiosoma, ventral. 27. — Male, idiosoma, dorsal. 28. — Female, idiosoma, ventral. 29. — Female, tectum, dorsal. 30. — Male, tectum, dorsal. 31. — Deutonymph, coxa I, left, ventral. 32. — Female, anal sclerite, ventral. Scale (26— 28)= 100 μm, (29— 30)= 10 μm, (31) = 25 μm, (32) = 50 μm.

Idiosomal dorsum (Fig. 27). Dorsal shield well sclerotized except in two posterolateral areas where the soft cuticle is ornamented. Dorsal chaetotaxy, adenotaxy and poroidotaxy similar to female.

Idiosomal venter (Fig. 26). Sternigenital shield finely ornamented, bearing four pairs of setae. Genital opening normal. Opisthogaster with four pairs of ventral setae on the ornamented cuticle. Anal shield similar to female.

Legs. Similar to female. Tarsus I length 111, 114; tarsus II length 156, 161; tarsus III length 146, 147; tarsus IV length 208, 209; tibia I length 192, 194; tibia II length 64, 66; tibia III length 56, 59; tibia IV length 85 ± 3, 82-87, n=2; genua I length 86, 87 and femur I length 202, 207.

Types. Holotype, adult female. OSUAL. Type locality: CALIFORNIA, San Mateo Co., San Mateo Memorial Park, from litter at base of bracken fern, 4. V. 1976, D. E. Johnston and D. L. Wrensch colls. Paratypes: OSUAL. One male and one deutonymph at same locality and date; one female and one male from Marin Co., Muir Woods National Monument, under log in redwood forest, 27. IV. 1976, D. E. Johnston coll. To Centre for Land and Biological Resources Research, Ottawa, CLBRR: three females and two males, Marin Co., 0. 1 mi. S St. Pk., from redwood duff, 20. XII. 1958, C. W. O'Brien coll. To CLBRR, one female, San Mateo County, Belmont, 14. V. 1961, R. O. Schuster coll. To Field Museum, Chicago, FMNH: 16 females, three males, Sonoma Co., 2 miles N Kenwood, sifted redwood litter, 3. IV. 1981, D. Chandler coll.

Neoepicrius intermedius sp. nov.
(Figs 33-37)

Adult female (based on two specimens). Idiosoma length 505, width 360.

Gnathosoma. Chelicerae (Fig. 36), palps and subcapitulum similar to *N. californicus* except *hyp* 2 almost as long as *hyp* 1 (Fig. 34). Tectum strongly dentate.

Idiosomal dorsum (Fig. 33). Dorsal shield length 390; ornamented with bi- and trifurcate tubercles; soft cuticle ornamented with smaller, rounded tubercles. Dorsal seta *z1* very reduced, almost vestigial; *j3, j4* and *j5* very short; *s4* = 2 1/2x *z4, s4* = 1/2x *s5, s5* = *j6, s6* = 2 1/2x *j6*. Posterior setae long, weakly barbed, with forked tips. Dorsal adenotaxy, poroidotaxy as in Fig. 33; *gds6* complex with gland absent; *gdz6* complex present.

Idiosomal venter (Fig. 37). Similar to *N. californicus*, opisthogastric cuticle ornamented.

Legs. Normal for genus. Tarsus I length 146, tarsus II length 200, tarsus III length 185, tarsus IV length 263, tibia I 267, tibia II 78, tibia III 75, tibia IV 112, genu I 117 and femur I 255. Ratio of body length/tibia I = 1. 8. Coxa I with eight anterolateral glands and eight posteroventral glands.

Male unknown.

Types. Holotype, adult female. CLBRR. Type locality, BRITISH COLUMBIA, Shuswap R., 1 mi. N Sugar Lake, from cedar litter, 23. VII. 1966, E. E. Lindquist coll. Paratypes, CLBRR, one female at same locality and date.

Neoepicrius titanus sp. nov.
(Figs 38, 39)

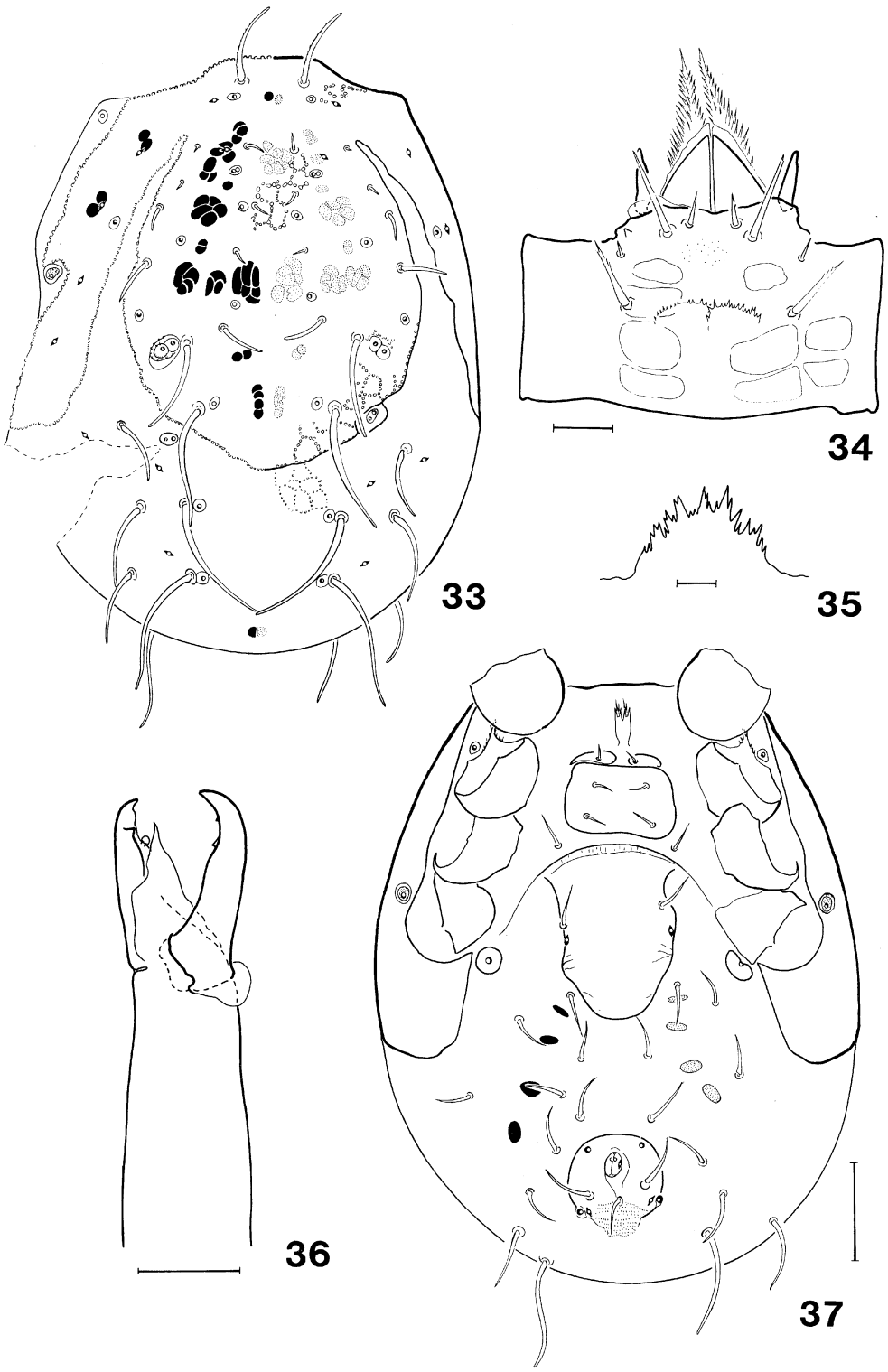
Adult female (based on one specimen). Idiosoma length 755.

Gnathosoma. Chelicerae, palps, subcapitulum normal for genus.

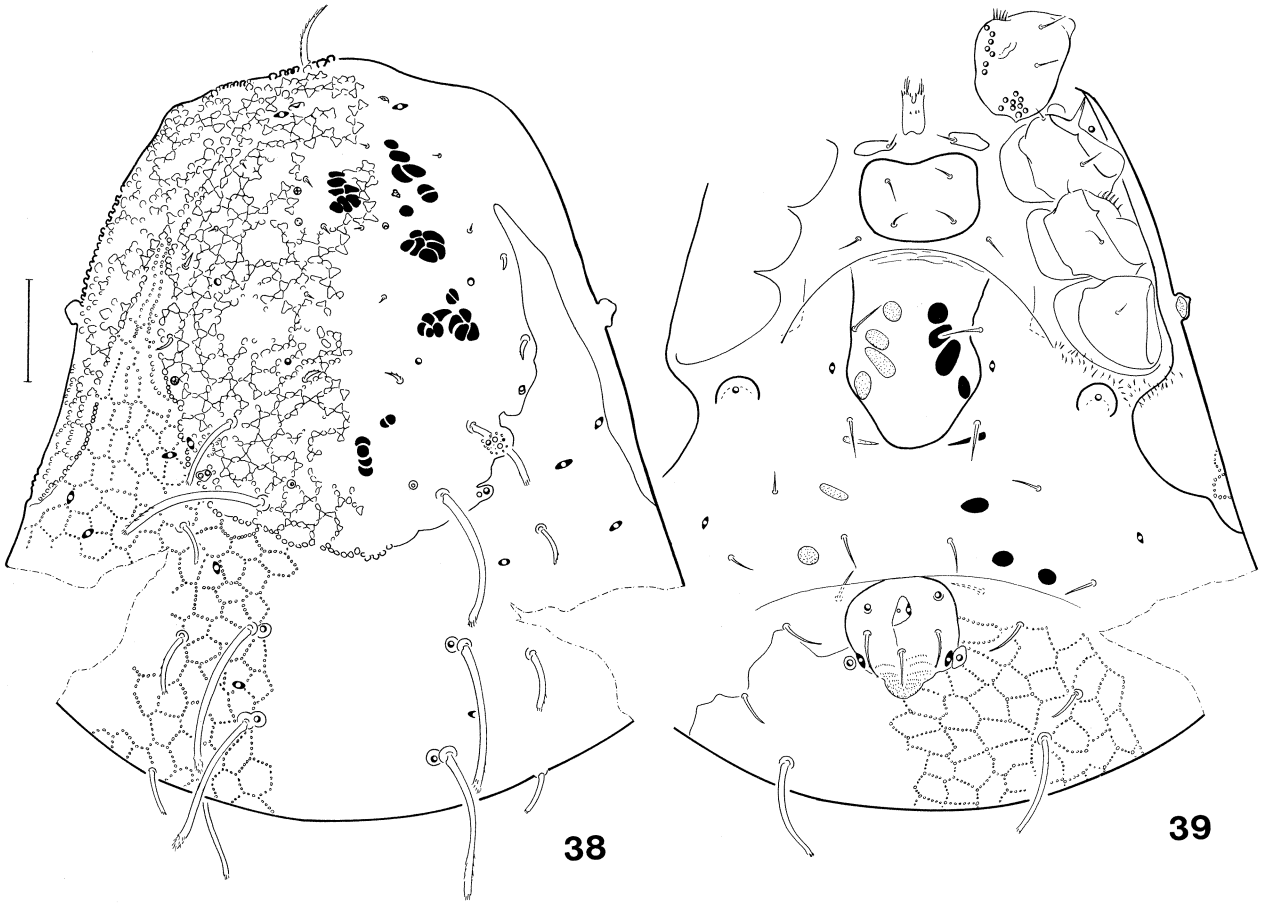
Idiosomal dorsum (Fig. 38). Dorsal shield length 478; lateropeltidial shields ornamented with bi- and trifurcate tubercles; soft cuticle with rounded weak tubercles, extending to anal shield. Dorsal chaetotaxy normal, setae *j3, j4, z1* and *z4* very reduced in length; *j6, s4* and *s5* short; S series of medium size and Z series relatively long; *j6* = 1/5x *s6, S2* = 1/4x *Z1*, *s*6 = ca 0. 6x *Z1, Z3* = ca 1. 4x *Z3-Z4*. Longer setae stout, weakly barbed, with wide spiculate tips. Dorsal adenotaxy, poroidotaxy and sigillotaxy as in Fig. 38; *gds6* complex and *gdz6* complex present and complete; lyrifissures *idz6* and *idS1* present.

Idiosomal venter (Fig. 39). Sternal region normal, sternal setae simple. Lyrifissure *iv5* off genital shield. Opisthogaster with six ventral setae on unornamented soft cuticle. Anal shield normal, fused with dorsal shield.

Legs. Normal for genus. Tarsus I length 185, tarsus II length 251, tarsus III length 242, tarsus IV length 336, tibia I length 415, genu I length 170, and femur I length 382. Ratio of body length/tibia I = 1. 8. Coxa I



FIGS 33-37: *N. intermedius* sp. nov., female. 33. — Idiosoma, dorsal. 34. — Subcapitulum, ventral. 35. — Tectum, dorsal. 36. — Chelicera, paraxial. 37. — Idiosoma, ventral. Scale (33, 37) = 100 μm, (34, 36) = 25 μm, (35) = 10 μm.



FIGS. 38-39: *N. titanus* sp. nov., female. 38. — Idiosoma, dorsal. 39. — Idiosoma, ventral. Scale = 100 μm.

with seven anterolateral glands and nine posteroventral glands.

TYPES. Holotype, adult female. CLBRR. Type locality, BRITISH COLUMBIA, Vancouver Is., Cowichan Lk. Exp. Sta., Mesachie Lk., from mixed Doug. fir-red alder-fern litter, 24. VII. 1975, E. E. Lindquist coll.

Neoepicrius orphanus sp. nov.
(Figs 44-47)

ADULT FEMALE (based on one specimen). Idiosoma length 500, dorsal shield length 411.

Gnathosoma. Chelicerae, palps, subcapitulum normal for genus. Tectum as in FIG. 45.

Idiosomal dorsum (FIG. 44). Dorsal shield ornamented with bi- and trifurcate tubercles; soft cuticle with rounded smaller tubercles. Dorsal setae *j3*, *j4, j5, z1* and *s4* very reduced; *j6, s4* and *s5* short; other dorsal setae long or of medium size; *j6* = ca 0. 16x *s6*, *S2* = 1/3x *Z1, Z1* slightly longer than *Z3, Z3* = 2x *Z3*-Z4. Dorsal adenotaxy and poridotaxy as in FIG. 44; *gds6* complex with gland absent; *gdz6* complex present.

Idiosomal venter (FIG. 47). Normal, with sternal setae simple and relatively long. Genital shield with *iv5* apparently absent. Opisthogaster with six pairs of setae. Anal shield normal.

Legs. Normal for genus. Tarsus I length 167, tarsus II length 221, tarsus III length 194, tarsus IV length 273, tibia I length 303, genu I length 118 and femur I

length 288. Ratio of body length/tibia I = 1. 6. Coxa I with eight posteroventral glands and unrecognizable number of anterolateral glands.

TYPES. Holotype, adult female. CLBRR. Type locality, BRITISH COLUMBIA, Vancouver Is., 1 mi. NE intersect HWY. 4-49 lat., from cedar litter near bog, 29. VII. 1975, E. E. Lindquist coll.

Neoepicrius sp.
(Fig. 40-43)

Adult male (based on one specimen). Idiosoma length 411.

Gnathosoma. Tectum strongly dentate (Fig. 41).

Idiosomal dorsum (Figs 40, 42). Dorsal shield ornamented with small bi- and trifurcate tubercles. Dorsal shield reaching to level of dorsal seta *Z4; S2* and *S3* on the shield, *S4, S5* and *Z5* on soft cuticle. Dorsal seta *z1* reduced in length (Fig. 42); *j3, j4, j5* and *s4* short; remainder of dorsal setae long. Setae *j6, s5, s6* and *S2* similar in length; *s4* sligthly shorter and similar to *S3; Z3* longer than *Z1, Z3*=3x *Z3*-Z4. Dorsal adenotaxy reduced: *gdj3* complex absent; *gds6* complex with gland absent; *gdz6* complex present. Lateropeltidial shields well developed; fused with dorsal shield at level of setae *s4*.

Idiosomal venter (Fig. 43). Sternigenital shield wide; with four pairs of setae; genital opening between coxae III. Lyrifissure *iv5* apparently absent. Opisthogaster with six pairs of setae. *Gv4* absent. Anal shield normal.

Legs. Normal for genus. Coxa I with six posteroventral glands and two? anterolateral glands.

Material studied. One male, CALIFORNIA, Amador Co., 2 1/2 mi. N Jackson, from litter, 16. IV. 1957, L. M and Smith, R. O. Schuster colls., CLBRR.

Key to Species of *Neoepicrius*
(based on adult females)

1. — Complex *gds6* with one gland and two non-glandular organs; *gdz6* present (one gland and one non-glandular structure) (Figs 13, 20, 38). Seta *j6* = ca 0. 16x *s6* 2
— Complex *gds6* with gland absent; gdz6 complex present or absent 3

2. — Lyrifissures *idz6* and *idS1* present; *s6*= 0. 57 *Z1; Z3* = 1 1/3 *Z3-Z4; S2* = 1/4x *Z1*; (Fig. 38). Well sclerotized mites; ornamentation of the soft opisthonotal cuticule extends to anal shield. Lyrifissure *iv5* off genital shield (Fig. 39). Coxa I with 7 anterolateral and 9 posterolateral glands. *N. titanus*
— Lyrifissures *idz6*, *idS1* absent; *s6* = 2/3x *Z1; Z3* = 3x *Z3*-Z4; *S2* = 1/2x *Z1* (Fig. 13). Ornamentation of opisthonotal soft cuticule not extending to anal sield. Lyrifissure *iv5* on genital shield (Fig. 14). Coxa I with eight anterolateral and eight posterolateral glands ..... *N. krantzi*

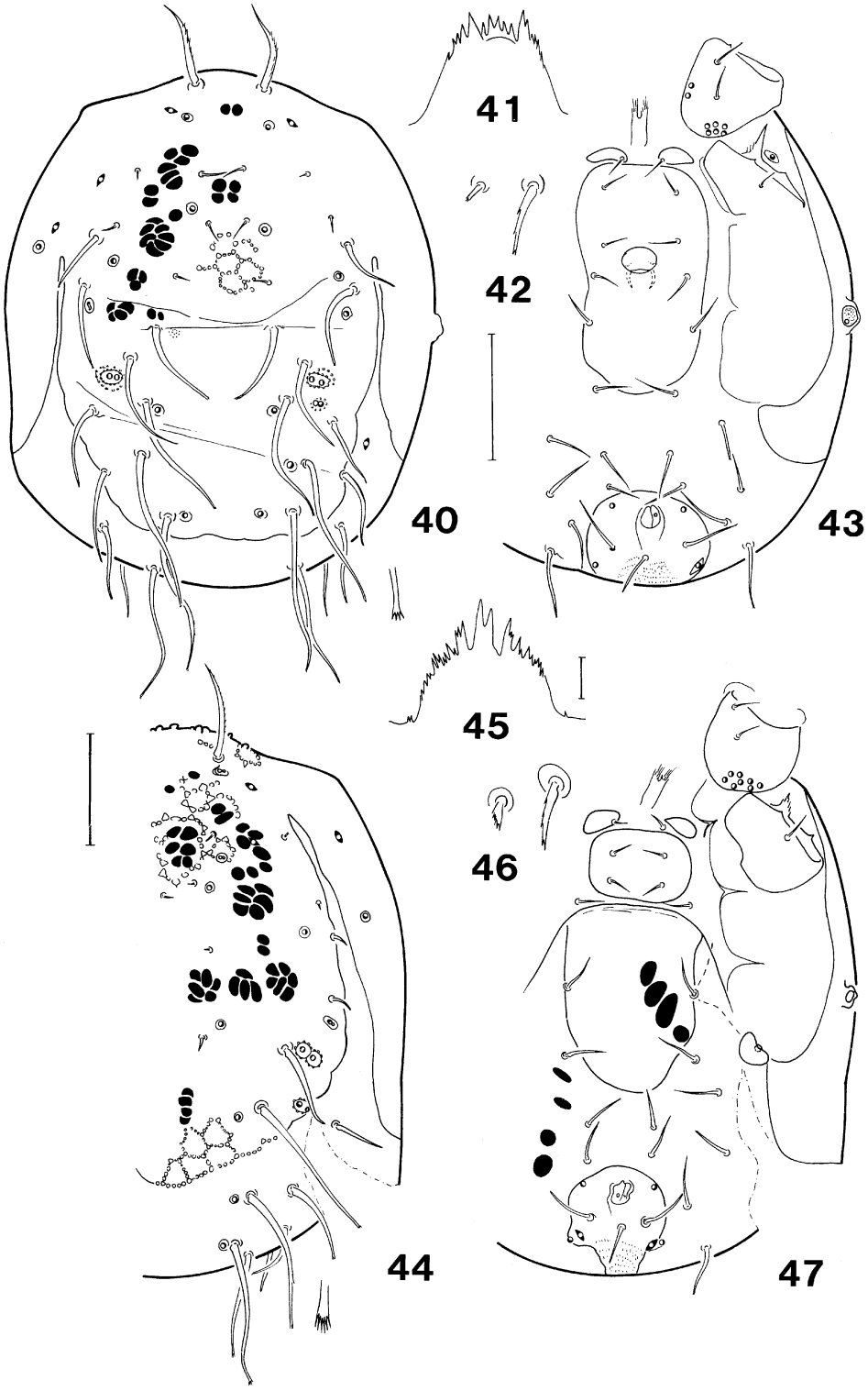
3. — Gland complex *gdz6* present (Figs 33, 44). 4
— Gland complex *gdz6* absent (Fig. 23); *j6, s4* and *s5* long: *j6*=*s5*; *s4* slightly shorter; *j6* = 0. 7x *s6; s6* = 0. 7x *Z1; Z3* = 3x *Z3*-Z4. Coxa I with six anterolateral and four posterolateral glands ..... *N. californicus*

4. — Dorsal setae (Fig. 33) *j6, s4* and *s5* medium *size*, *s6* long, other podonotal setae short; *j6* = 0. 4x *s6; s6* = 0. 7x *Z1; Z3* = 2x *Z3*-Z4; *S2* = 1/2x *Z1* ..... *N. intermedius*
— Dorsal setae (Figs 44, 46) *j6, s4* and *s5* reduced in length; *j6* = 0. 2x *s6; s6* = 1/2x *Z1; Z3* = 2x *Z3*-Z4; *S2* = 1/3x *Z1* ..... *N. orphanus*

Discussion

Among the apormorphies that characterize *Neoepicrius* are several features that can be attributed to paedomorphism. These characters include the dorsal sclerotization and chaetotaxy, the leg setae, and the coxal glands.

The sclerotization of the dorsum in adult females of the new genus is reduced in extent; the dorsal shield does not cover the entire dorsum and is not fused entirely with the lateropeltidial shields. This condition is similar to that of the larva and protonymph (where known) of the other genera of Epicriidae. Likewise, the absence of dorsal setae *z6* (deutonymphal), the J series (*J3-J5* protonymphal in *Epicrius*, larval in other Mesostigmata), and *Z2* (deutonymphal in *Epicrius*) is paedomorphic. Ventral setae *av2* and *pv2* (both deutonymphal) on tibia I are absent. In the complex chaetotaxy of tarsus I the seta *am1* (normally larval) is protonymphal in Epicriidae but is absent in *Neoepicrius*. There are six anterolateral glands on coxa I in *N. californicus* and this is the same number as occurs in the deutonymph. Apparently, the usual condition is that the number of anterolateral glands in adults is reduced from the number in the deutonymph (see Fain, 1966, *Dermanyssus*). In *Epicrius*, the deutonymphal number is seven and that of the adult is four.



FIGS. 40-47: 40— 43. — *Neoepicrius* sp., 44— 47. *N. orphanus* sp. nov. 40. — Male, idiosoma, dorsal. 41. — Male, tectum, dorsal. 42. — Male, setae *j3, z1*. 43. — Male, idiosoma, ventral. 44. — Female, idiosoma, dorsal. 45. — Female, tectum, dorsal. 46. — Female, setae *j6, z1*. 47. — Female, idiosoma, ventral. Scale = 100 μm, (41, 45) = 10 μm.

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